

Amendments to the Claims:

These amendments introduce no new matter and support for the amendment is replete throughout the specification and claims as originally filed. These amendments are made without prejudice and are not to be construed as abandonment of the previously claimed subject matter, or agreement with any objection or rejection of record.

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

Claim 1. (Currently Amended) An isolated, synthesized or recombinant antibody that specifically binds to a c-erbB2 receptor, wherein said antibody specifically binds to the c-erbB2 epitope as bound by F5 (as encoded by ATCC plasmid deposit ATCC # to be determined designation PTA-7843) or C1 (as encoded by plasmid deposit ATCC # to be determined SEQ ID NO: 2), and further wherein said antibody is an internalizing antibody.

Claim 2. (Cancelled)

Claim 3. (Previously presented) The antibody of claim 1, wherein said antibody comprises an amino acid sequence selected from the group consisting of SEQ ID NO: 1, SEQ ID NO: 2, SEQ ID NO: 1 having conservative substitutions, and SEQ ID NO: 2 having conservative substitutions.

Claim 4. (Previously presented) The antibody of claim 1, wherein said antibody shares at least 70% sequence identity with the amino acid sequence of SEQ ID NO: 1 or SEQ ID NO: 2 as determined using a BLAST algorithm and default parameters, and wherein said antibody has a binding affinity for c-erbB2, on cells, of at least 10^{-5} M.

Claim 5. (Previously presented) The antibody of claim 1, wherein the amino acid sequence of said antibody differs from the amino acid sequence of SEQ ID NO: 1 or SEQ ID NO: 2 by no more than 30 residues.

Claim 6-13 (Cancelled)

Claim 14. (Previously presented) The antibody of claim 1, wherein said antibody comprises the amino acid sequence of SEQ ID NO: 1.

Claim 15. (Previously presented) The antibody of claim 1, wherein said antibody comprises the amino acid sequence of SEQ ID NO: 2.

Claims 16-33 (Canceled).

Claim 34. (Previously presented) A chimeric molecule that specifically binds a cell bearing a c-erbB2 receptor, said chimeric molecule comprising an effector attached to an antibody of claim 1.

Claim 35. The chimeric molecule of claim 34, wherein said effector is selected from the group consisting of a cytotoxin, a label, a radionuclide, a drug, a liposome, a ligand, and an antibody.

Claim 36. The chimeric molecule of claim 34, wherein said chimeric molecule is a fusion protein.

Claim 37. The chimeric molecule of claim 34, wherein said cell is a cancer cell.

Claim 38. The chimeric molecule of claim 37, wherein said cancer cell is a breast cancer cell.

Claim 39. (Previously presented) The chimeric molecule of claim 34, wherein said antibody shares at least 70% sequence identity with the amino acid sequence of SEQ ID NO: 1 or SEQ ID NO: 2 as determined by a BLAST algorithm using default parameters, and wherein said antibody has a binding affinity for c-erbB2 of at least 10^{-5} M.

Claim 40. (Previously presented) The chimeric molecule of claim 34, wherein the amino acid sequence of said antibody differs from the amino acid sequence of SEQ ID NO: 1 or SEQ ID NO: 2 by no more than 30 residues.

Claim 41-42 (Cancelled)

Claim 43. (Previously presented) The chimeric molecule of claim 34, wherein said antibody comprises the amino acid sequence of SEQ ID NO: 1.

Claim 44. (Previously presented) The chimeric molecule of claim 34, wherein said antibody comprises the amino acid sequence of SEQ ID NO: 2.

Claims 45-52 (Cancelled)

Claim 53. (Previously presented) A composition comprising a pharmacological excipient and the antibody of claim 1.

Claim 54. (Previously presented) A composition comprising a pharmacological excipient and the chimeric molecule of claim 34.

Claim 55. (Previously presented) The antibody of claim 1, wherein said antibody has a binding affinity of at least 10^{-5} M.

Claim 56. (Previously presented) The antibody of claim 1, wherein said antibody comprises a single chain antibody.

Claim 57. (Previously presented) The antibody of claim 1, wherein said antibody comprises a homodimer.

Claim 58. (Previously presented) The antibody of claim 1, wherein said antibody is coupled to a surface of a phage.

Claim 59. (Previously presented) The antibody of claim 1, wherein the antibody comprises a chemically synthesized polypeptide, prepared by:

attaching a C-terminal amino acid of the polypeptide to an insoluble support; and
sequentially adding remaining amino acids of the polypeptide, thereby preparing the chemically synthesized polypeptide.

Claim 60. (Previously presented) The antibody of claim 1, wherein the antibody is prepared from a nucleic acid sequence encoding said antibody by expressing the nucleic acid sequence in a cell.

Claim 61. (Previously presented) The antibody of claim 60, wherein the nucleic acid sequence encoding said antibody comprises a chain shuffled mutant scFv gene in which a V_H or V_L gene from SEQ ID NO: 1 or SEQ ID NO: 2 has been replaced with a human V_H or V_L gene.

Claim 62. (Previously presented) The antibody of claim 60, wherein the nucleic acid sequence encoding said antibody comprises a member of a mutant antibody sequence library in which one or more partial or entire CDR sequences have been randomized.

Claim 63. (Previously presented) The antibody of claim 60, wherein the nucleic acid sequence encoding said antibody comprises a member of a mutant antibody sequence library in which the CDRs of the member sequences are diversified by site directed mutagenesis.

Claim 64. (Previously presented) The antibody of claim 60, wherein the nucleic acid sequence encoding said antibody is prepared by optimizing the nucleic acid sequence to reflect codon preferences for an expression system.

Claim 65. (Previously presented) The chimeric molecule of claim 34, said chimeric molecule comprising multiple effectors attached to the antibody of claim 1.

Claim 66. (Previously presented) The chimeric molecule of claim 34, said chimeric molecule comprising multiple targeting moieties.

Claim 67. (Currently amended) An isolated, synthesized, recombinant or single chain antibody that binds to the c-erbB2 receptor, wherein the binding of said antibody to the c-erbB2 receptor is competitively inhibited by F5 (as encoded by ATCC plasmid deposit-ATCC # to be determined designation PTA-7843) or C1 (~~as encoded by plasmid deposit-ATCC # to be determined~~SEQ ID NO: 2), and wherein said antibody is an internalizing antibody.

Claim 68. (Currently amended) The antibody of claim 1, wherein said antibody specifically binds to the c-erbB2 epitope as bound by the peptide encoded by ~~plasmid deposit-ATCC # to be determined for F5~~ (ATCC plasmid deposit designation PTA-7843).

Claim 69. (Currently amended) The antibody of claim 1, wherein said antibody specifically binds to the c-erbB2 epitope as bound by the peptide encoded by ~~plasmid deposit-ATCC # to be determined for C1~~ (SEQ ID NO: 2).